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Because of the need to explore the dimensions of the teaching-learning process, this paper presents a systems' conceptualization of this process, describes an instrument for measuring the major classes of teacher-pupil influence behavior, and discusses data collected with the instrument. Teaching is viewed as human interaction within a series of inter-relationships (or system) among persons. A model using only those significantly relevant relationships is selected as the focus of any particular investigation. The foci of the present study are: (1) subject matter instruction, (2) control, (3) routine-administration, and (4) organization. Behaviors observed in teaching interaction fall into one of those categories as well as one of four functions: (1) exposure to information, (2) precipitation of a response or action, (3) evaluation of a subject matter response or a classroom management move (feedback), or (4) recognition of an idea or affective feeling. Interactions are coded in a three-stage sequence: (1) stimulus demand upon the teacher, (2) response, or lack of it, by the teacher, and (3) pupil response to the teacher's move. (BP)

SOME ASPECTS OF TEACHER BEHAVIOR

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SOME ASPECTS OF TEACHER BEHAVIOR*

With CERA now a reality, Canadian educational researchers have an even greater opportunity and responsibility to establish comprehensive objectives in an attempt to throw light upon major concerns facing educational decision-makers today.

With the common voice of CERA, researchers should benefit from a tapping of new resources, a combining of efforts and a dynamic sharing of insights. As a result, we should be able to launch out beyond the riskless shores and attack in a more positive way a few basic problem areas within Canadian educational circles. One problem which must be tackled concerns the question, "What are the dimensions of the teaching-learning process?". Because of the great amount of work done in this area in the United States and elsewhere, plus a new enthusiasm - a turning point -- by Canadian researchers interested in education, it seems possible that new and more meaningful solutions may be on the horizon. Any new knowledge about teaching could have many positive effects on, for example, the type of professional orientation educators offer future teachers. This professional orientation has always been limited due to a lack of sophistication by teacher educators as to the process of teaching.

This investigator has to agree with N.L. Gage who indicates that there are some major domains of teaching which seem to be characteristic of all teachers to a relative degree. The present paper is an attempt to explore a systems' conceptualization of the teaching-learning process, describe a measuring instrument and discuss some interesting data collected using the instrument.

Teaching and learning can be conceptualized as the two faces of the coin. The total process represents a two-way relationship. Learning does not take place in a vacuum. Learning -- behavior change made possible through direct interaction -- occurs in an environment. This learning makes differences in an individual's behavior: in his everyday actions he chooses for future situations; in his manifested attitudes towards others; and in his personal development. What becomes paramount in the classroom, then, are specific and functional learnings that give evidence of making appropriate differences in behavior. And these functional learnings are partially determined by the interactional relationships established within the classroom setting.

From a psychological perspective, Stavsky agrees with the above thinking when he states:

> From a psychotherapeutic point of view, teaching is basically an interpersonal relationship, which with its proper techniques and devices, helps reduce or control anxiety and so promotes learning.

In accordance with the above point of view, teaching can be viewed as human interaction in which interaction occurs within a system, that is, a series of inter-relationships among persons -- in this case in a classroom.

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*CCRE is pleased to bring you this paper. The ideas expressed are those of the author.

Such a system is highly complex involving many inter-related variables. Consequently, the only useful model to represent the teaching-learning system is a homomorphic one (Beers 1966, Ashley 1956). A homomorphic model is one in which significantly relevant variables from the complex system are selected so that these variables represent those focussed upon in a particular investigation or observation. For clarification, one example of a particular focus might be that of questioning in the classroom.

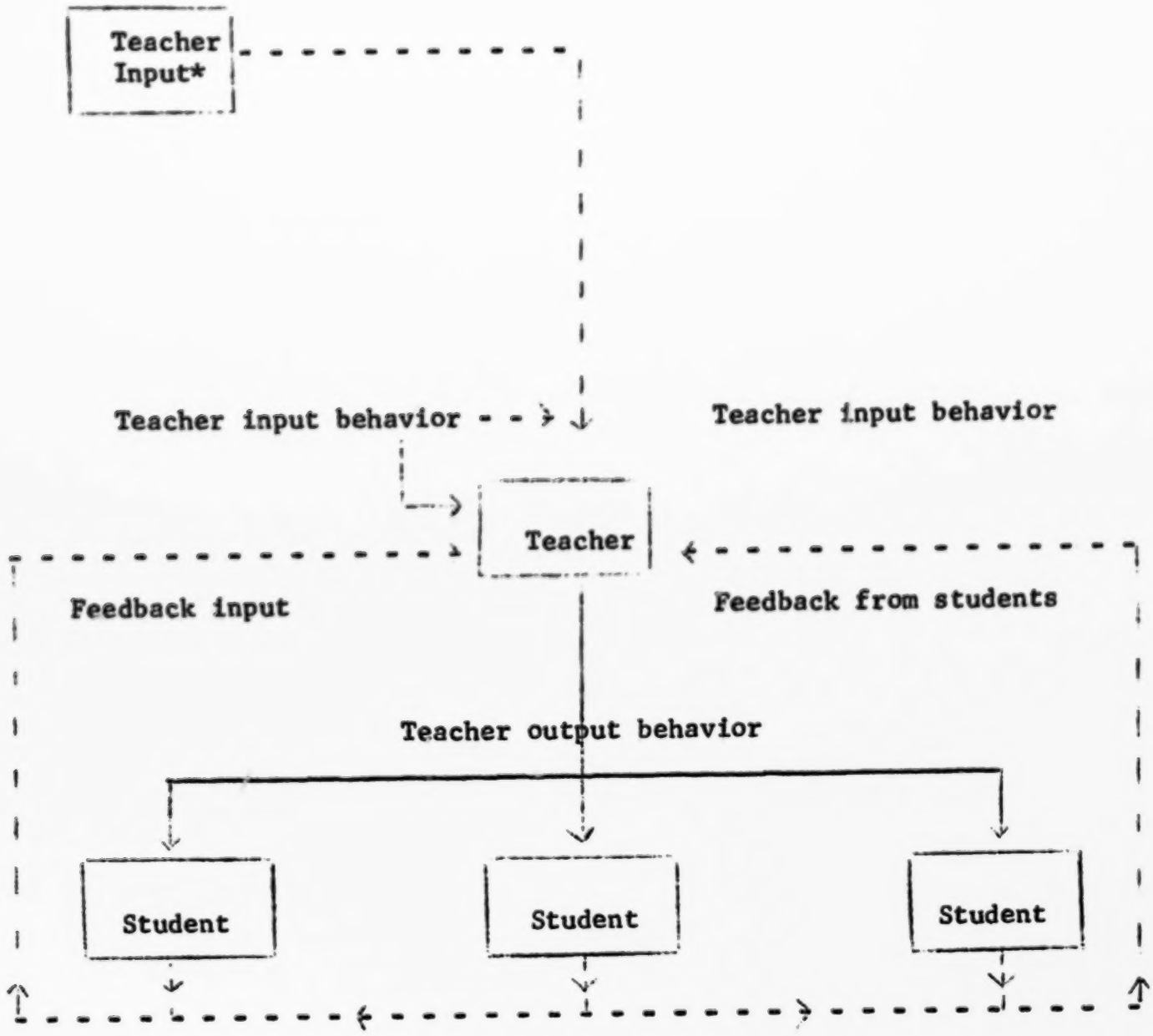
One would assume that in the real classroom, questioning was an important aspect of the teaching process. Further, it would be assumed that an investigator's measuring technique would be based on criteria related to classroom questioning.

As mentioned above, the general systems model indicates promise for providing realistic and comprehensive measures of selected classroom communication variables. Classroom interaction occurs within a supra-system, a framework containing humans and inanimate objects. Within the supra-system each student and the teacher is assumed to be an open and functional system capable of being influenced by other systems (persons) within the classroom environment through input feedback.

(The figure below is an attempt to indicate the relationship among the persons in a classroom setting.)

Figure I

CLASSROOM INTERACTION SHOWING RELATIONSHIP
BETWEEN TEACHER AND PUPIL BEHAVIOR



The remainder of this paper is an attempt to describe: (1) an instrument for measuring the major classes of teacher-pupil influence behavior, and (2) a discussion concerning some data gathered using this exploratory instrument.

The system that is to be described (hereafter referred to as the Teacher Observation Research system or the TOR system), represents an effort to develop a conceptually sound, relatively exhaustive measure of teaching behavior and the contextual variables which influence it. In developing the system advantage has been taken of the work of others who have been interested in the area. For example, Flanders (1960), Hughes (1959), Smith (1964), Bellock (1963, 1965), Aschner and Gallagher (1963), and Taba (1964), the work of Bales (1950) in the study of small group interaction, and the work of Noustakas, Siegal, and Schalock (1956), and Schalock and O'Neill (1960) in the study of parent-child behavior. The present system, however, attempts to overcome many limitations of previous efforts to categorize teacher behavior. For example, the Flanders system of interaction analysis focusses upon verbal behavior to the exclusion of non-verbal behavior, in comparison to the system described herein which notes non-verbal as well as verbal tactics and moves manifested by both teacher and students.

Ryans (1963) established a checklist which allows observers to note certain characteristics of teachers as they behave in the classroom, whereas the present system attempts descriptively to identify actual bits and sequences of behavior for later collation, analysis and the generation of inferences. Using the Taba system one concentrates more on the dependent results of actual teacher behavior. The present system concentrates definitely on the actual instructional process rather than on teacher characteristics or pupil outcomes.

More specifically, an effort has been made to tie a system conceptually to what is known about the cognitive development-teaching-learning process, to make it inclusive of both the instructional and the management parameters of teaching, to provide in it for the detailed description of both teacher and learner interaction behavior, to use as a data base both the verbal and non-verbal aspects of teacher-learner interaction, and to conceptualize teaching behavior so as to make the system applicable across a wide range of ages and settings. As well, the TOR system provides a record of the setting variables which influence teacher and/or child behavior, e.g., the physical characteristics of the classroom. In brief, the observation system represents an attempt to observe teaching behavior as it occurs and sequentially notes teacher-pupil interaction in relation to a wide range of factors which influence it.

It is obvious that such a system is at this time impractical for use by teachers in the field without some training. Its use to date has been exploratory. It is hoped that others may extend the system or expand aspects of it to learn about teacher behavior at the basic research level.

Operationally, the system requires that a human observer apply memorized, preconceived category sets to the description of teacher and learner behavior. Ideally an audio-video-tape would be used to supplement data gathered by the observer. In combination, the two systems permit a single observer to obtain a description of the relevant dimensions of a teacher-learning situation at a level of detail that is not possible through the use of a face-to-face observation or an audio tape or a video tape alone.

Two units of measurement are employed in the system, the "interact" and the "interactive exchange". Interact stands for a specific unit of influence that one person exerts upon another. The interact is some message that is directed to another. In this context, a message may consist of a gesture; a single word; a phrase or a sentence; or a series of sentences. The length of the message is incidental to the nature and/or intent of it. The interact is the basic unit of measurement because it is always the interact that is categorized.

The interactive exchange, the second unit of measurement, involves a series of interacts or messages that are exchanged sequentially by two or more people. All interacts in the series must stem from the initial interact which opened the interchange. Therefore an interactive exchange always involves at least two interacts.

The data which comes from the system are of two kinds, category frequency counts and patterns of interaction. Depending upon the purpose of the investigator, the frequency count data categories may be considered individually or in combination, e.g., the frequency of appearance of category A or B, the combined frequency of categories A & B, or the ratio of categories $\frac{A + B}{A + B + X}$. Pattern data permit one to note, for example, who begins the interaction, teacher or students, what tactics are used to initiate the interaction, and how do students respond to certain classes of teacher behavior. Together, these two sets of data permit rich and varied sets of data permit rich and varied analysis to be applied to the information that derives from the system. Evidence of the utility of the system comes from several sources. Observers can be trained within a month's time to use the system effectively. To date, the reliability of observers with the system has always exceeded the criterion set, namely, 70 per cent agreement between two or more independent observers on individual category assignment and interaction pattern recordings. The independence of the various measures, as indicated by the inter-correlation's between the measures, was near zero, (Schalock, Beaird and Simons, 1964); (Schalock and Beaird, 1967); (Miller, 1967). Schalock and Beaird (1967), noted that the predictive validity (R^2 value) of the measures in relation to other independent predictors of teacher behavior ranged from .55 to .89. Behavior profiles that have been developed for both student and experienced teachers, and for a given teacher in different subject areas, consistently reflect differences, indicating that the measures derived from the system are relatively sensitive.

Since the intent of this paper is simply to acquaint the researcher with the system and to describe an exploratory application of it in the description of teaching behavior, details concerning theoretical constructs will be omitted. Lengthy discussions of the theoretical basis used in construction of the instrument can be found in the Schalock et al (1964) report to the U.S.O.E. and a somewhat brief account may be published soon in dissertation abstracts (Miller, 1967).

In conceptualizing a paradigm for the measurement of teaching behavior, one must select certain domains of influence behavior representative of the major dimensions of teaching behavior. And even more basic, one must ask the question, what is teaching behavior? For the purposes of the system under discussion teaching behavior refers to those areas of influential behavior which relate to the instructional process in the teaching-learning environment. Within this context four classes of teaching behavior can be identified. These include: subject matter instruction, control, routine-administration and organization. The present system neglects to account for other areas of influence behavior such as aspects of affective influence behavior. Perhaps later instrumentation can include these areas.

Instructional behavior relates to moves made by the teacher or student(s) to shape long-term memory store or to modify the cognitive process which acts on the concepts stored in the memory. Traditionally, this has been the primary function of the teacher.

The other classes of teaching behavior relate to the establishment of a setting which permits instruction and/or learning to occur, i.e. classroom management. They would take into account mainly short-term memory store. Within classroom management, control refers to a person's influence in providing for situationally appropriate behavior. An example would be a teacher asking a child to walk slower, separating two children who are talking during a lesson or reminding a child to speak only after being acknowledged by the teacher. Routine-administrative moves refer to those behaviors which help establish the classroom or the school setting as an institution, e.g., preparation for recess, sharpening pencils, saluting the flag, etc. Organizational behavior is similar to control or administrative behavior except that it is superimposed over and above the other classes of behavior and facilitates instruction, control, and administrative functions. For example, within the instructional domain, a teacher may move children into small study groups, or remind a child of the lesson that is being studied. These moves would be classified as facilitating the instruction act being performed by the teacher. Examples of organizational behavior that facilitate routine-administrative matters include lining children up for recess, alerting a class to be ready to begin the flag salute, etc.

The categories comprising the domains of teacher behavior appear in Table I.

Table I

Categories Used to Describe Classes of Teaching Behavior

Instructional Behavior	Management Behavior
	- control - routine-administration - organization

At the same time as one classifies a given instance of a teacher's behavior as falling into one of the four classes above, an observer can further classify each move as to the function it represents in facilitating the learning process. Operationally this refers to one of four functions: (1) exposure to information; (2) precipitation of a response or action; (3) evaluation of a subject matter response or a classroom management move (feedback); (4) recognition of an idea or affective feeling. Every teacher and/or pupil interact can be classified as serving one of the four functions.

It has been mentioned that all teacher acts relating to classroom instruction can be classified first by domain of influence such as control or subject matter, then second by the function of the move within the major domains. There is still much that can be done by way of classification. For purposes of this paper, the writer will very briefly and with the help of charts and tables identify other useful analyses.

It can be ascertained from Table II that within each function or strategy area certain teacher tactics or methods of operation can be dimensionally identified. For example, within the exposure area, one could classify the presentation of information by the teacher and/or students according to the medium used. In the present system exposure can be accomplished by the use of real language such as the teacher talking or by the use of such aids as the blackboard and finally by employing artifacts such as a rock collection.

Table II

Classroom Observation Instrument Coding Features

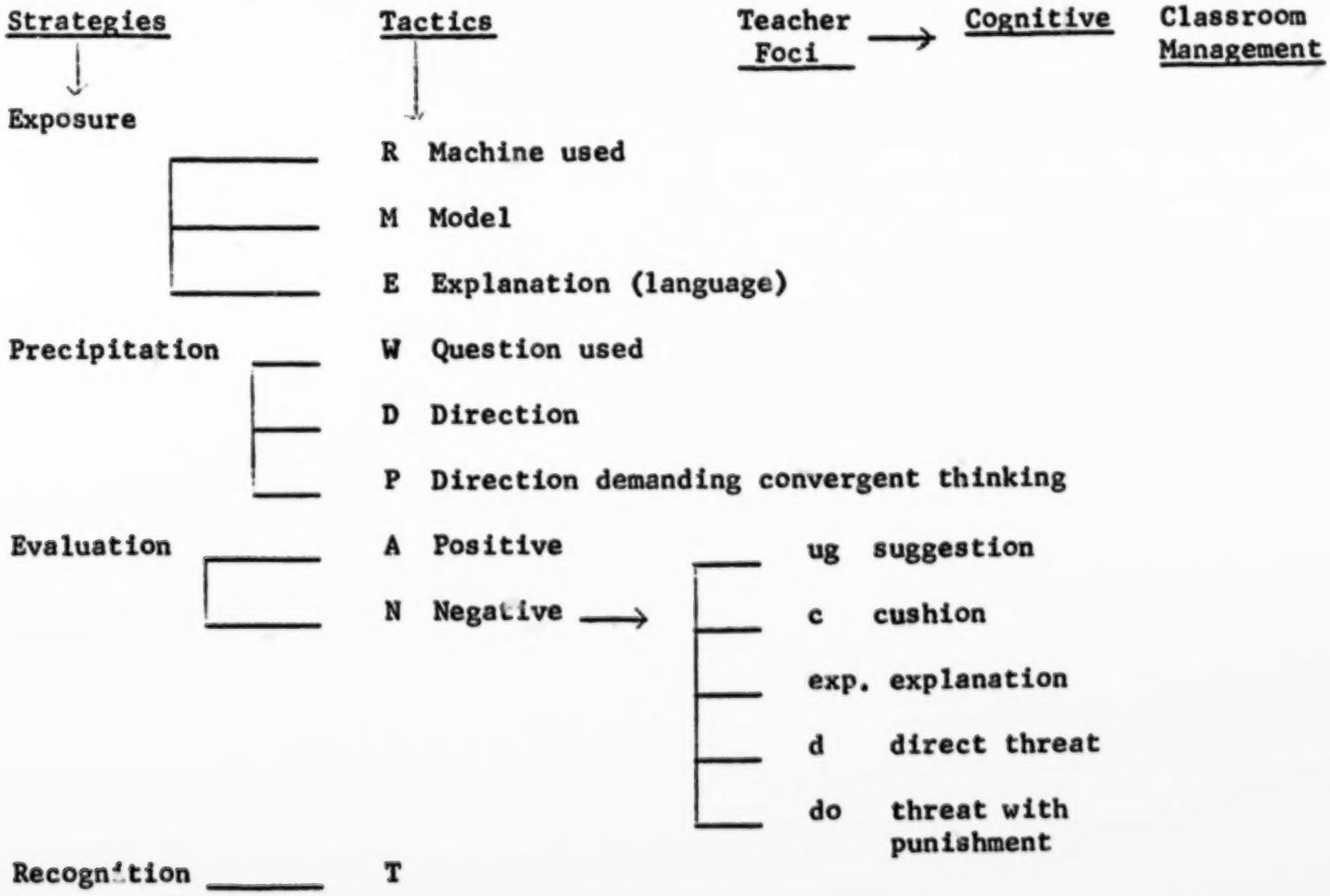


Table III

A Summary of the Five-Step Decision Process Involved in Classifying Each Instance of Teaching Behavior

Decision 1: What domain of influence is represented by the teacher or student behavior? Does the behavior represent, e.g., instruction?, control?, etc. After making this classification, then:

Decision 2: What component of the instructional process does it represent: i.e., does it provide information, does it precipitate a response, does it provide feedback? After making this classification then:

Decision 3: What method of presentation (within a given component) does it represent? After this classification, then:

Decision 4: What instructional move or tactic does it represent?

In addition to the descriptions of a teacher's behavior in terms of the category sets thus far described, it is possible also to describe his behavior in terms of certain "qualitative" characteristics that are thought by many to be a major significance in the process of teaching. These focus upon "mental health" related factors such as warmth or hostility. These factors are viewed as modifiers of the primary category sets described above. The category sets used in describing the "modifiers" as aspects of teaching are listed in Table 4. The task of recording the existence of modifying behaviors is simplified by recording only the intensity of the modifiers represented by categories other than (0). Practically, this means that at least 1/2 of all category entries will not show relatively high levels of intensity, emotionality or physical contact. Teaching is thought to be relatively free from high emotionality, etc. However, research has not been fruitful in concluding the significance of any qualitative aspects of teaching. But certainly, these characteristics are a part of the teacher's repertoire and therefore need to be included in a system which attempts to be exhaustive in its description of a teacher's behavior.

The basic model for observation is a three-stage interaction sequence: (1) a stimulus (demand situation) operating upon the teacher within the classroom setting; (2) a response (or lack of response) of the teacher to the demands of the situation; and (3) the response of the child or group of children to the teacher's response with this model, behavior of the teacher can be related specifically to behavior of children in his class. In turn, some child behavior can be related to behavior of the teacher. The model also permits recording of interaction between teacher and child that continues overtime, i.e., where there are more than two exchanges in the interaction sequence. An actual example of the coding of one such exchange follows in Table 6.

After each observation the coded interacts can be analyzed in many different ways. Appended are a few of the tabulations which are being used to construct profiles as feedback information to teacher-trainees participating in field experiences.

Table IV

Category Sets Used in Describing the "Qualitative" Characteristics of a Teacher's Behavior

Category Set	Symbol	Definition
I Target Audience	o	An individual child
	⌐	Part of the class or sub-group with whom the teacher is working
II Intensity	o	Equivalent to the general "noise level" of the classroom and/or not unusual for the particular teacher being observed
	1	Somewhat above the general pitch of the classroom and/or above that generally used by the teacher being observed
	2	Far above the general pitch of the room or that which is used generally by the teacher
III Emotional Qualities		
Warmth, Interest Exuberance	0	Equivalent to the usual demonstrativeness of the teacher that is being observed
	+	Somewhat above the demonstrativeness generally observed in the teacher
	++	Far above the usual level of demonstrativeness
Distance, Aloofness	o	Equivalent to that which typifies the behavior of the teacher that is being observed
	1	Somewhat more negative feeling than is reflected ordinarily by the teacher that is being observed
	2	Far more negative feeling than is reflected ordinarily by the teacher that is being observed
Upset, Concern	o	Equivalent to that which typifies the behavior of the teacher that is being observed
	1	Somewhat more upset etc. than is reflected ordinarily by the teacher that is being observed
	2	Far more upset, etc. than is reflected ordinarily by the teacher that is being observed
IV Physical Contact	o	No physical contact
	⌐—⌐	Physical contact as an accompaniment to an instance of teaching behavior

Table V

Modifiers Specific to Child Behaviors (Used in Conjunction With Those Used to Modify a Teacher's Behavior See Table 4)

Category Set	Symbol	Definition
V Involvement in Instruction	v	Verbal
	n	Non-verbal
	^	Hand-in-the-air
	t	Listening to or looking at the teacher
	-?-	Unable to respond when performance is demanded
VI Focus and Appropriateness	^	Focus shared with teacher, but behavior inappropriate
	0	Focus not that of the teacher's

Table VI

Stimulus Responses	Code No.	Interpretation of Codes
Pupil Stimuli	7'n	One student was in the cognitive domain of influence behavior; his activity was mostly non-verbal (in this case painting). The Prime Mark (1) indicates activity was facilitative.
Teacher Response	'S	Teacher response was facilitative in the cognitive domain and consisted of a statement recognizing a substantive idea the child was pursuing.
Pupil Response	7'n	Same as first interact of the exchange.
Teacher Response	'E	Teacher was facilitating cognitive domain by explaining some idea to the pupil.
Pupil Response	7't	Pupil responded to teacher by listening and looking at teacher -- again facilitating cognitive domain.

NOTES: (1) Art lesson: children were painting and teacher was giving much individual help.

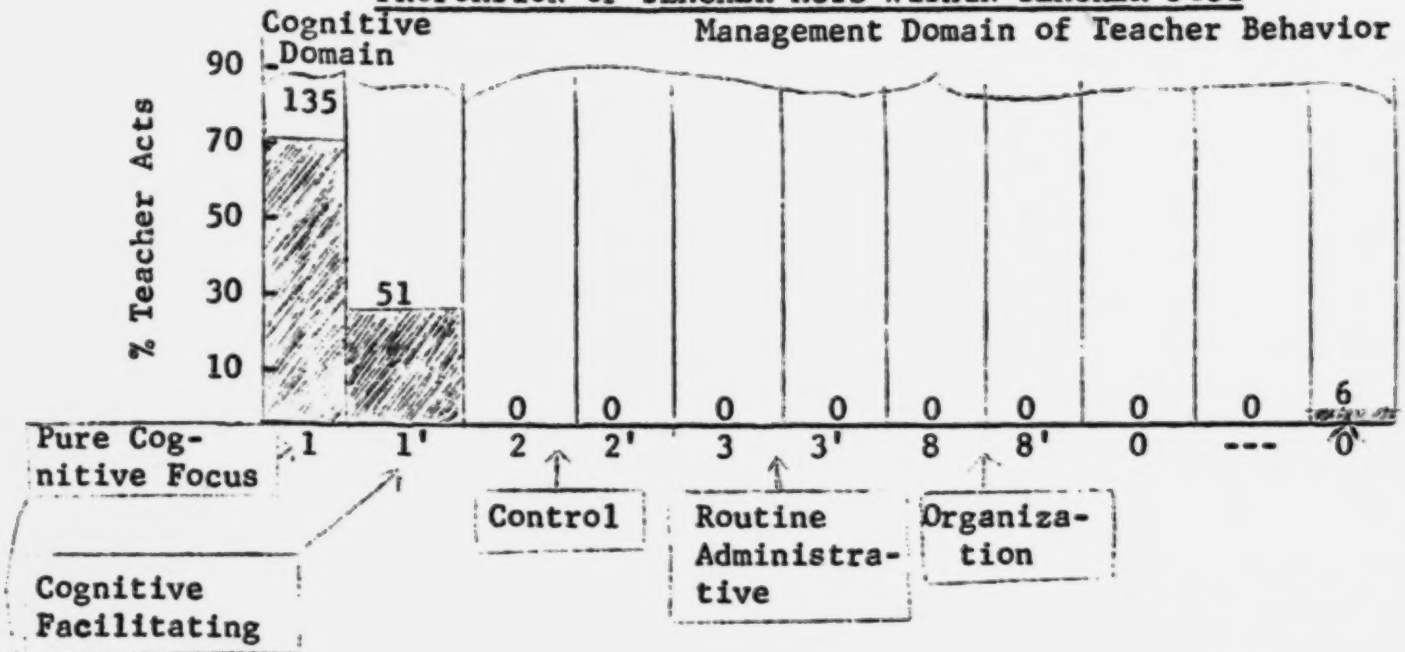
(2) Interaction here was between one child and the teacher.

FOCUS AND PATTERN OF CLASSROOM INTERACTION

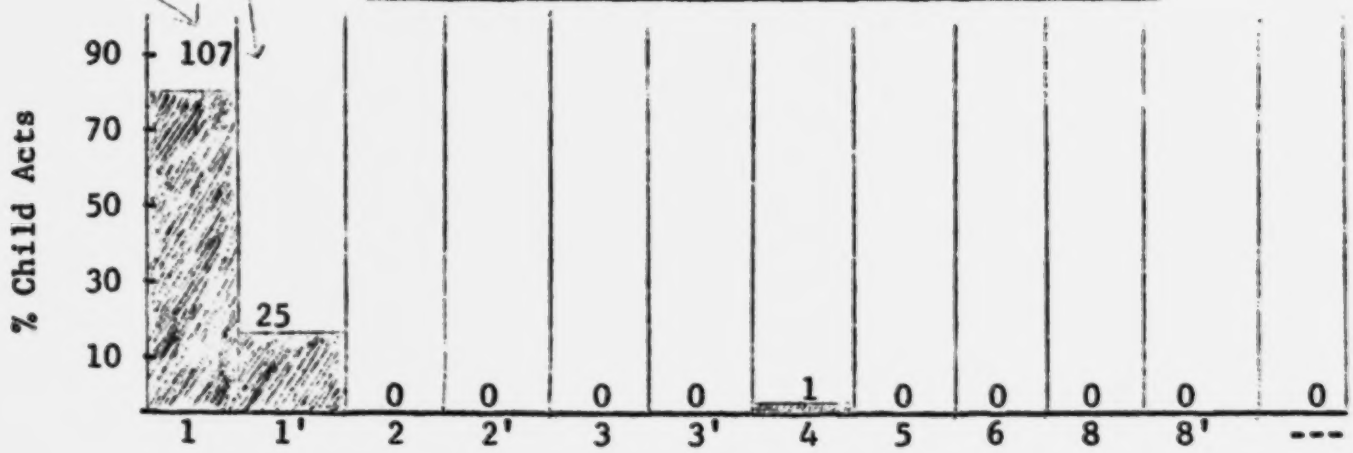
TEACHER: _____

ACTIVITY: Reading

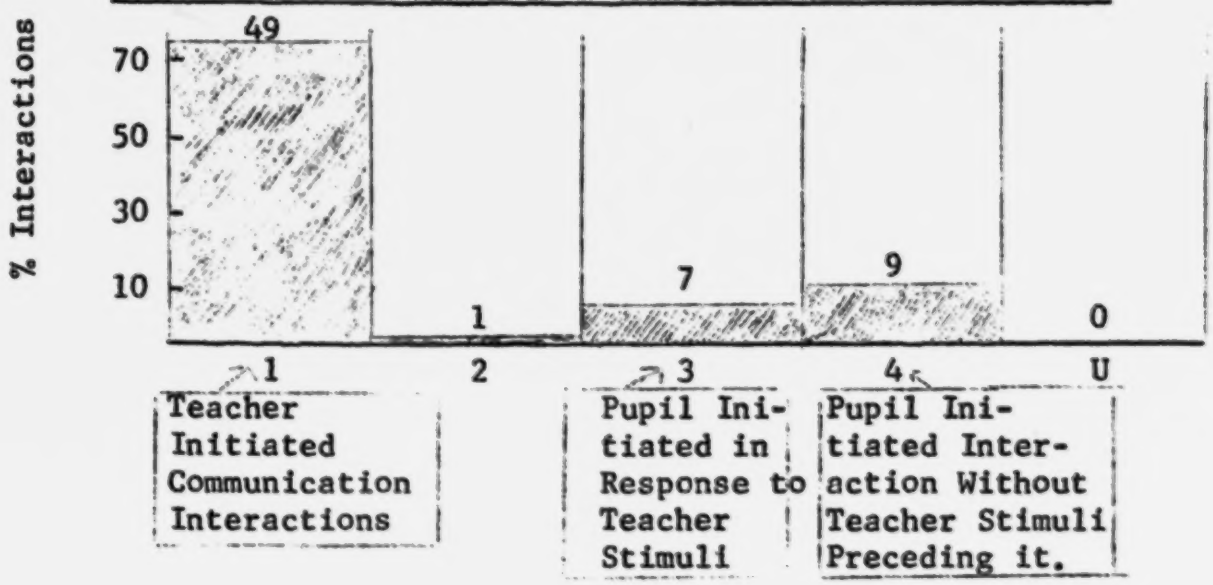
PROPORTION OF TEACHER ACTS WITHIN TEACHER FOCI



TEACHER FOCI
PROPORTION OF CHILD ACTS WITHIN CHILD FOCI

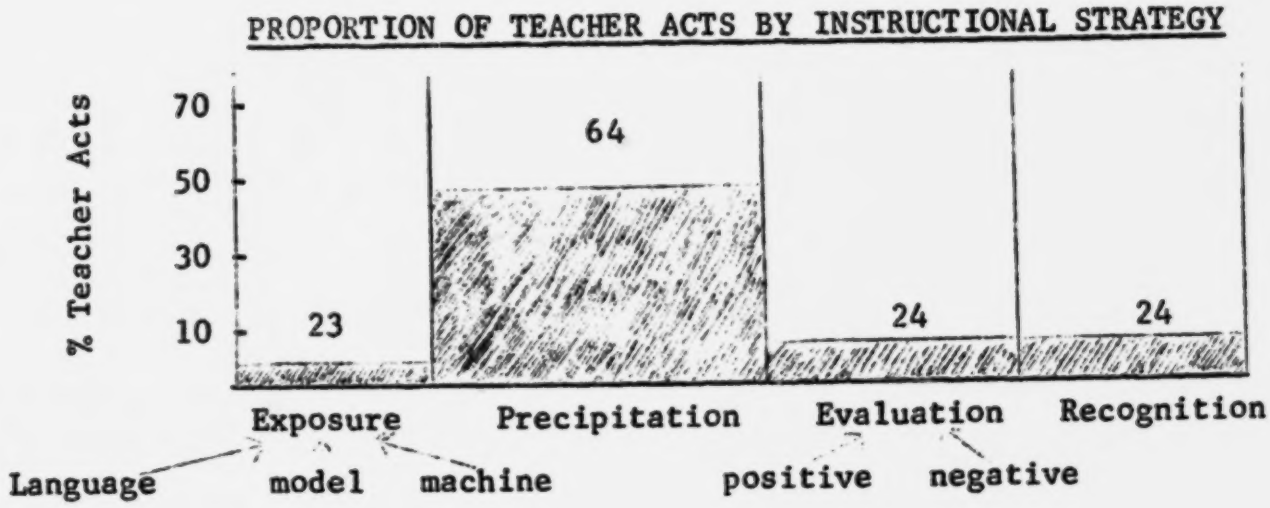


CHILD FOCI
PROPORTION OF INTERACTIONS WITHIN INITIATION PATTERNS

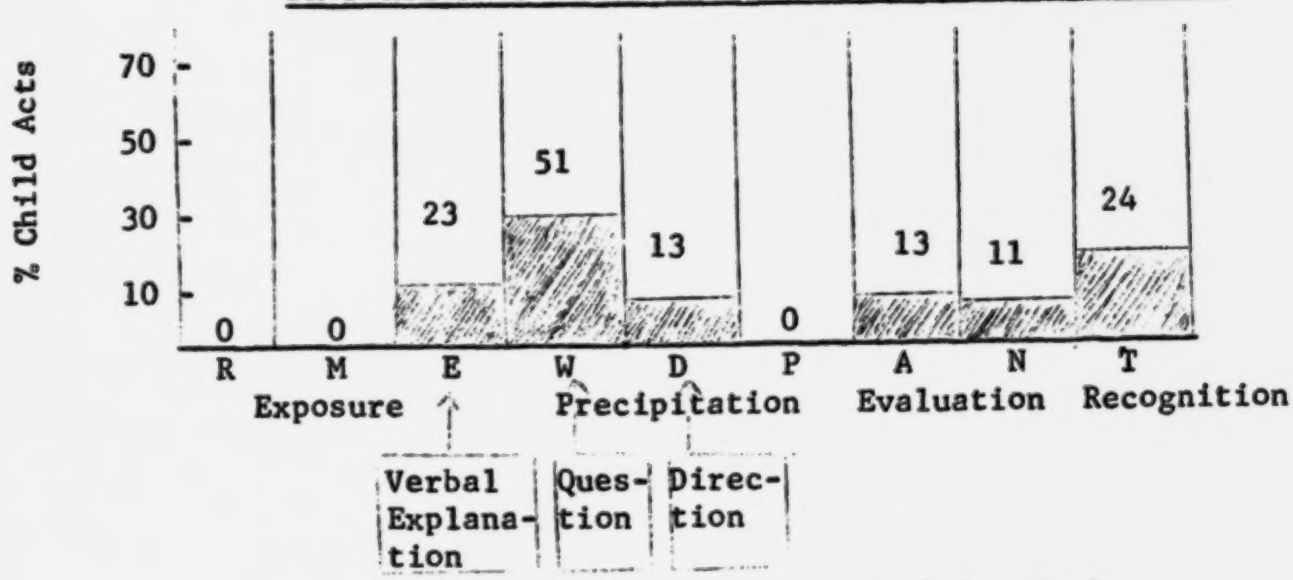


INITIATION OF INTERACTION PATTERNS

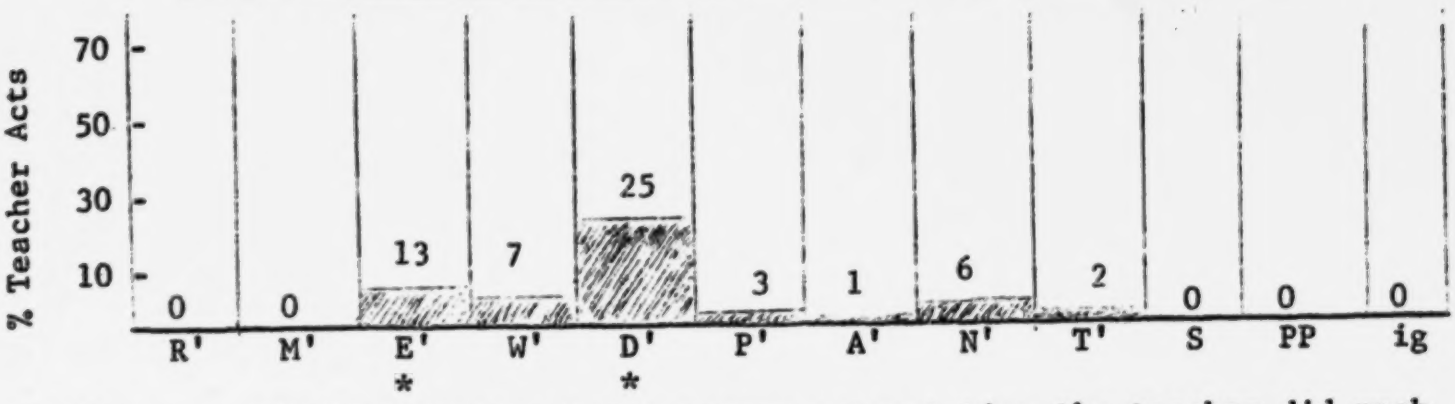
STRATEGIES AND TACTICS USED IN INSTRUCTION



Instructional Strategies
(Teacher Behavior Related Only To Focus 1)



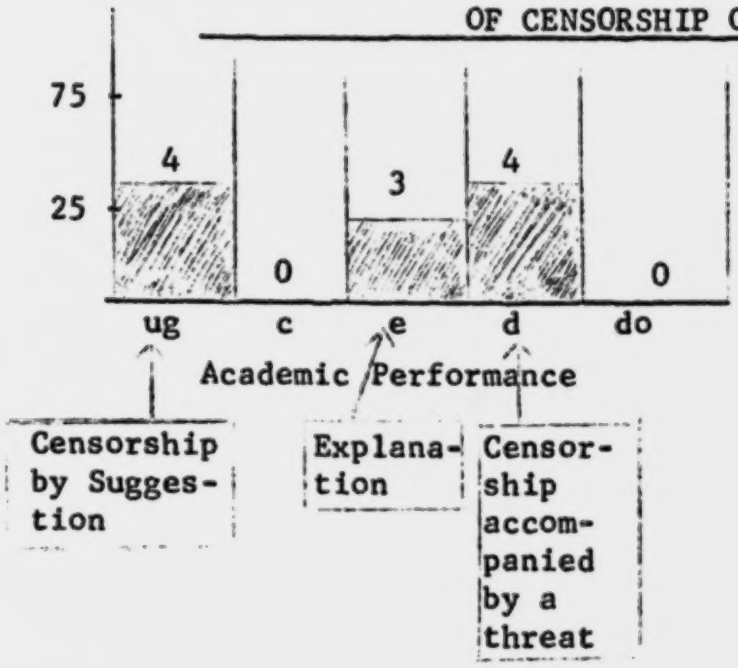
Tactics Within Instructional Strategies
(Teacher Behavior Related Only to Focus 1)

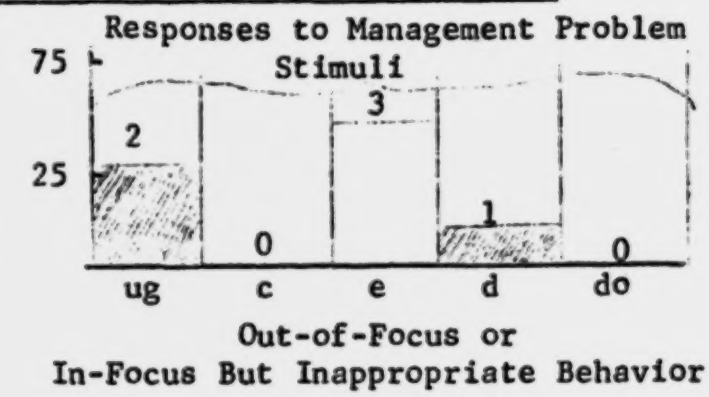


*Inference: To facilitate subject matter presentation the teacher did much explaining and directing

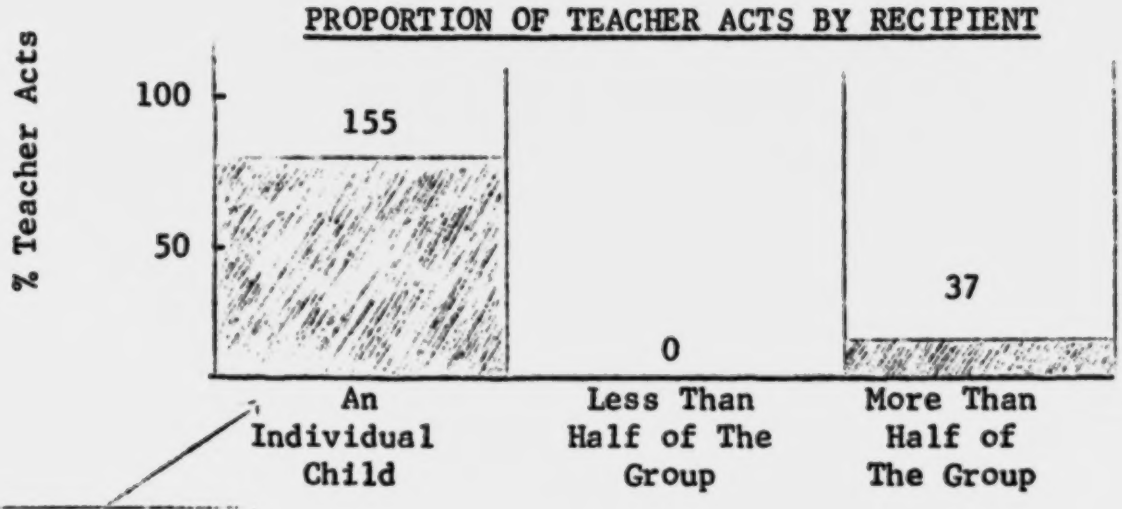
Tactics Used to Manage Instruction
(Teacher Behavior Related Only to Focus 1')

PROPORTION OF CENSORSHIP MOVES IN RELATION TO ALL INSTANCES OF CENSORSHIP OF CHILD BEHAVIOR

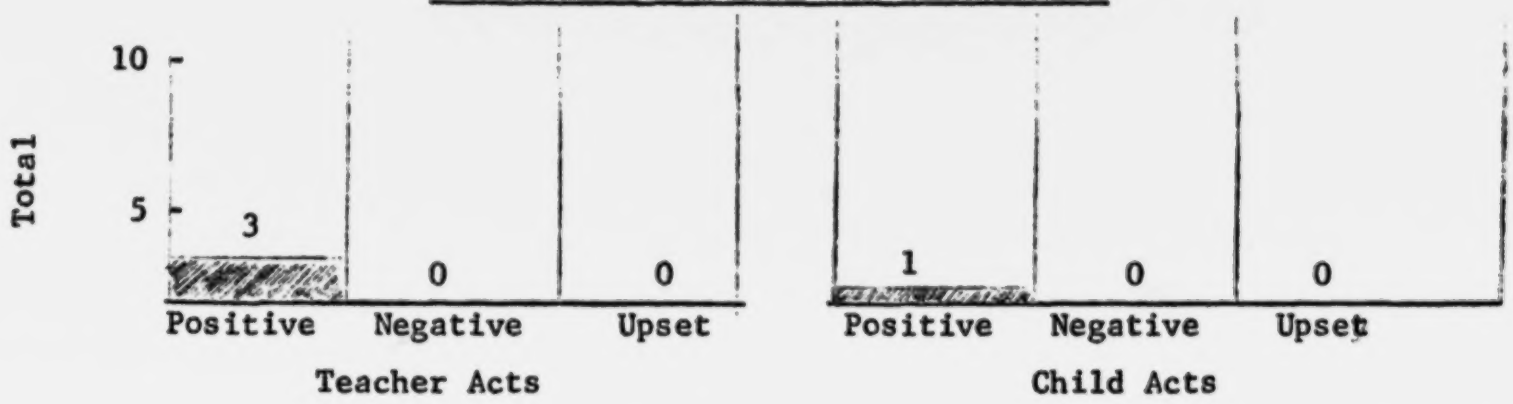




PROPORTION OF TEACHER ACTS BY RECIPIENT



INSTANCES OF AFFECT IN THE CLASSROOM



The instrument is being used and one such study involved approximately 40 classroom observations completed on 20 Ss. These observations have yielded some interesting conclusions. These conclusions will be presented very briefly here but will be printed with actual data tables prior to conference time.

Conclusions:

(1) Over 80% of all classroom interacts were in the pure cognitive domain of influence behavior.

(2) Teachers spent about 20% of their time facilitating subject matter material.

(3) Very little time was spent by the teacher in the management domain of teaching.

(4) Over 60% of the teacher interacts were directed toward individual students in the classroom.

(5) Over 60% of the teacher-pupil interactions were initiated by the teacher, and very few were initiated by the students in response to other student interactions.

(6) In moves to evaluate student ideas or behavior, the teachers used positive evaluation tactics more than negative ones.

(7) Regarding teacher strategies, the teachers in this study spent most of their time exposing students to information or ideas rather than evaluating, precipitating a response or providing recognition across all domains of teaching.